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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,195	12/22/2003	Forrest Frank Hopkins	139681-2	6880

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EXAMINER	
SONG, HOON K	

ART UNIT	PAPER NUMBER
2882	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/743,195	HOPKINS ET AL.	
	Examiner	Art Unit	
	Hoon Song	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-21 and 23-72* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-21 and 23-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-5, 9-11, 13-21, 23-25, 27, 29, 33-41, 44-46, 48-49, 51-52, 54-55, 57-60, 64-68 and 70-72, are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunham et al. (US 6385292) in view of Hiraoglu et al. (US 6272230B1).

Regarding claims 1, 25, 48 and 58, Dunham teaches a system comprising:

an acquisition subsystem including an x-ray computed tomography scanner having a stationary radiation source (14a-14c) and a stationary detector (88a-88c), said acquisition subsystem is adapted to acquire intensity measurements pertaining to an object (column 5 lines 54-67); and

a reconstruction subsystem (42), in communication with the acquisition subsystem for generating view data from the intensity measurements and for utilizing three-dimensional reconstruction techniques.

wherein the acquisition subsystem acquires image data of the articles for three dimensional reconstruction without rotating the articles.

However, Dunham fails to teach a means for conveying articles to be scanned through the computed tomography scanner and the reconstruction subsystem is reconstructing the view data into image data representative of the explosive.

Hiraoglu teaches a CT system having a means for conveying 122 articles 112 to be scanned through a computed tomography scanner and reconstructing image data representative of an explosive.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the CT system of Dunham with a means for conveying articles to be scanned 28 through the computed tomography scanner and the explosive reconstruction as taught by Hiraoglu, since it would provide successive movement of the articles for faster/mass scanning and provide more accurate explosive recognition/detection of the articles.

Regarding claims 3, 23, 49 and 59, Dunham teaches the computed tomography machine comprises: a vacuum housing chamber (74) for generating an electron beam; a target (68) for receiving the electron beam and emitting x-rays in response to the electron beam; and a detector array (88a-88c) located opposite the target for receiving the emitted x-rays.

Regarding claims 4, 24, 51 and 60, Dunham fails to teach the computed tomography machine comprises: a source ring 54 including a plurality of stationary x-ray sources (14-14c); and

a detector ring (88a-88c) adjacent to the source ring and including a plurality of discrete detector modules (88a-88c).

Regarding claim 5, Dunham teaches the reconstruction subsystem comprises a plurality of reconstruction stages (CT)

Regarding claims 9, 33 and 64, Dunham teaches the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to iteratively and statistically reconstruct the image data (CT).

Regarding claim 10, Dunham teaches a computer-aided detection subsystem for analyzing the image data (CT).

Regarding claims 11 and 34, Dunham teaches the computer-aided detection subsystem comprises a plurality of computer-aided detection stages (CT).

Regarding claims 12 and 26-28, Dunham teaches at least one of the plurality of computer-aided detection stages is in communication with any of the plurality of reconstruction stages (CT).

Regarding claims 13, 27, 29, 52 and 54-55, Dunham as modified by Hiraoglu teaches at least one computer-aided detection stage is adapted to receive the image data from one of the reconstruction stages, analyze the image data, and identify an area of interest within the image data (Hiraoglu teaches a step of identifying explosive).

Regarding claim 14, Dunham teaches the computer-aided detection subsystem is adapted to feedback image data of the area of interest to the reconstruction subsystem (CT).

Regarding claims 16 and 35, Dunham as modified by Hiraoglu teaches the energy discriminating detector includes an assembly of two or more x-ray attenuating materials the signals from which can be processed in either a photon counting or a charge integration mode (paragraph [0077]).

Regarding claims 17, 36-37, 44 and 71, Dunham as modified by Hiraoglu teaches the acquisition subsystem comprises at least one detector for detecting x-rays from at least two

different incident x-ray energy spectra (Hiraoglu teaches a high and low energy discriminating method).

Regarding claims 18, 38, 45 54 and 65, Dunham as modified by Hiraoglu teaches an alternative modality subsystem (figure 3 and 4).

Regarding claim 19, 39, 46 57 66, Dunham as modified by Hiraoglu teaches the alternative modality subsystem comprises one or more of the group consisting of a coherent scattering subsystem, a quadrupole subsystem, and a trace detection subsystem.

Regarding claims 20, 21, 40, 51 and 67, Dunham as modified by Hiraoglu teaches a conveyor belt for transporting 28 the article to the acquisition subsystem (figure 2a).

Regarding claims 15, 40, 41, 68 and 70, Dunham fails to teach the acquisition subsystem comprises an energy discriminating detector adapted to acquire energy sensitive measurements.

Hiraoglu teaches an energy discriminating dual energy detector.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the CT detector of Dunham with the energy discriminating detector as taught by Hiraoglu, since the detector would provide better information about the object.

Claims 6, 30, 53 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunham as modified by Hiraoglu further in view of Hsieh et al. (US 5907593).

Regarding claims 6, 30, 53 and 61, Dunham fails to teach the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to reduce artifacts in the image data.

Hsieh teaches a CT system having artifact reducing algorithm.

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the CT system of Dunham with the algorithm, since it would provide better image.

Claims 7-8, 31-32 and 62-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunham as modified by Hiraoglu further in view of Hsu et al. (US 2003/0035507A1).

Regarding claims 7, 31 and 62, Dunham fails to teach the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to vary the voxel size in the image data.

Hsu teaches a CT system having algorithm for voxel size (paragraph [0030]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the CT of Dunham with the algorithm as taught by Hsu, since it would provide better diagnostic image.

Regarding claims 8, 32 and 63, Dunham fails to teach the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to compensate for noise in the acquired information.

Hsu teaches a CT system having a algorithm for noise (paragraph [0032]).

It would have been obvious to one to adapt the Hsu's CT with the algorithm since it would provide better image.

Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunham as modified by Hiraoglu further in view of McClelland et al. (US 7139406B2).

Regarding claim 47, Dunham fails to teach the at least one additional source of information comprises a risk variable subsystem.

McClelland teaches a risk profile for baggage screening system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the CT system of Dunham with the risk profiling since it would provide better inspection.

Claims 1, 3-5, 9-11, 13-21, 23-25, 27, 29, 33-41, 44-46, 48-49, 51-52, 54-55, 57-60, 64-68 and 70-72, are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou et al. (US 2004/0213378A1) in view of Hiraoglu et al. (US 6272230B1).

Regarding claims 1, 25, 48 and 58, Zhou teaches a system comprising:

an acquisition subsystem including an x-ray computed tomography scanner having a stationary radiation source (802) and a stationary detector (806), said acquisition subsystem is adapted to acquire intensity measurements pertaining to an object; and

a reconstruction subsystem, in communication with the acquisition subsystem for generating view data from the intensity measurements and for utilizing three-dimensional reconstruction techniques (paragraph 54).

wherein the acquisition subsystem acquires image data of the articles for three dimensional reconstruction without rotating the articles (figure 8, paragraph 54).

However, Zhou fails to teach a means for conveying articles to be scanned through the computed tomography scanner and the reconstruction subsystem is reconstructing the view data into image data representative of the explosive.

Hiraoglu teaches a CT system having a means for conveying 122 articles 112 to be scanned through a computed tomography scanner and reconstructing image data representative of an explosive.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the CT system of Zhou with a means for conveying articles to be scanned 28 through the computed tomography scanner and the explosive reconstruction as taught by Hiraoglu, since it would provide successive movement of the articles for faster/mass scanning and provide more accurate explosive recognition/detection of the articles.

Regarding claims 3, 23, 49 and 59, Zhou teaches the computed tomography machine comprises: a vacuum housing chamber (claim 19) for generating an electron beam; a target (108) for receiving the electron beam and emitting x-rays in response to the electron beam; and a detector array 806 located opposite the target for receiving the emitted x-rays.

Regarding claims 4, 24, 51 and 60, Zhou teaches the computed tomography machine comprises: a source ring (figure 8) including a plurality of stationary x-ray sources (paragraph 71); and

a detector ring adjacent to the source ring and including a plurality of discrete detector modules (figure 8).

Regarding claim 5, Zhou teaches the reconstruction subsystem comprises a plurality of reconstruction stages (CT)

Regarding claims 9, 33 and 64, Zhou teaches the plurality of reconstruction stages comprises one reconstruction stage including an algorithm adapted to iteratively and statistically reconstruct the image data (CT).

Regarding claim 10, Zhou teaches a computer-aided detection subsystem for analyzing the image data (CT).

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Regarding claims 13, 27, 29, 52 and 54-55, Zhou as modified by Hiraoglu teaches at least one computer-aided detection stage is adapted to receive the image data from one of the reconstruction stages, analyze the image data, and identify an area of interest within the image data (Hiraoglu teaches a step of identifying explosive).

Regarding claim 14, Zhou teaches the computer-aided detection subsystem is adapted to feedback image data of the area of interest to the reconstruction subsystem (CT).

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Regarding claims 17, 36-37, 44 and 71, Zhou as modified by Hiraoglu teaches the acquisition subsystem comprises at least one detector for detecting x-rays from at least two different incident x-ray energy spectra (Hiraoglu teaches a high and low energy discriminating method).

Regarding claims 18, 38, 45 54 and 65, Zhou as modified by Hiraoglu teaches an alternative modality subsystem (figure 3 and 4).

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Regarding claims 15, 40, 41, 68 and 70, Zhou fails to teach the acquisition subsystem comprises an energy discriminating detector adapted to acquire energy sensitive measurements.

Hiraoglu teaches an energy discriminating dual energy detector.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the CT detector of Zhou with the energy discriminating detector as taught by Hiraoglu, since the detector would provide better information about the object.

Claims 6, 30, 53 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou as modified by Hiraoglu further in view of Hsieh et al. (US 5907593).

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Hsu teaches a CT system having an algorithm for noise (paragraph [0032]).

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Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou as modified by Hiraoglu further in view of McClelland et al. (US 7139406B2).

Regarding claim 47, Zhou fails to teach the at least one additional source of information comprises a risk variable subsystem.

McClelland teaches a risk profile for baggage screening system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the CT system of Zhou with the risk profiling since it would provide better inspection.

Claims 1, 3-5, 9-11, 13-21, 23-25, 27, 29, 33-41, 44-46, 48-49, 51-52, 54-55, 57-60, 64-68 and 70-72, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraoglu in view of Dunham.

Hiraoglu teaches a system for detecting an explosive within an article comprising:

an acquisition subsystem including an x-ray computed tomography scanner said acquisition subsystem is adapted to acquire intensity measurements pertaining to the explosive (column 13 lines 49-67);

a means for conveying122 articles 112 to be scanned through the computed tomography scanner; and

a reconstruction subsystem (42), in communication with the acquisition subsystem for generating view data from the intensity measurements and for reconstructing the view data into image data representative of the explosive, wherein said reconstruction subsystem utilizes three-dimensional reconstruction techniques (column 12 lines 56-67);

wherein the acquisition subsystem acquires image data of the articles for three dimensional reconstruction without rotating the articles (column 12 lines 56-67).

However Hiraoglu fails to teach the CT scanner has a stationary radiation source and a stationary detector,

Dunham teaches a CT system having a stationary radiation source (14a-14c) and a stationary detector (88a-88c).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the CT system of Hiraoglu with stationary x-ray source and detector as taught by

Dunham since it would reduce the complexity of the scanning system and would not require a rotating x-ray source and detector for possibly faster scanning.

Response to Arguments

Applicant's arguments with respect to claims 1, 3-21 and 23-72 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is (571) 272-2494. The examiner can normally be reached on 9:30 AM - 7 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272 - 2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hoon Song/
Primary Examiner, Art Unit 2882